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LaHC at CLEF 2015 SBS Lab

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Abstract. This paper describes the work of the LaHC lab of Saint-  tienne for the Social Book Search lab at CLEF 2015. Our goals were i) to study a field-based retrieval model (BM25F), exploiting various topics and documents fields, in order to build a strong baseline for further experiments, ii) to compare it with a Log logistic (LGD) retrieval model, and iii) to exploit some documents related to each topic (i.e. the documents given as negative or positive examples for a topic).

The official results show that LGD outperforms BM25F, and that our approaches exploiting documents related to the topic requesters are based on a different interpretation of this additional information than the interpretation of the Social Book Search organizers.

Keywords: Field-based Information Retrieval, Re-ranking, Relevance Feedback

1 Introduction

This paper describes the work of the LaHC lab of Saint-  tienne for the Suggestion track of the Social Book Search lab at CLEF 2015. The goal is *to investigate techniques to support users in searching and navigating the full texts of digitised books and complementary social media as well as providing a forum for the exchange of research ideas and contributions* [3]. Participants to this track have to *suggest books based on rich search requests combining several topical and contextual relevance signals, as well as user profiles and real-world relevance judgments*. The dataset is based on 1.5 million books descriptions and metadata, some of them user-generated, crawled from Amazon and LibraryThing.

Our participation to the Social Book Search lab at CLEF 2014 [2] has shown us that the SBS dataset contains many various kind of data, and that before experimenting our Social Information Retrieval models, we need a better understanding of how to represent and how to exploit non-social (but nevertheless complex) data using classic models.

Especially, our work for the Social Book Search lab at CLEF 2015 focuses on:

- study a field-based retrieval model (BM25F [5]), exploiting various topics and documents fields, in order to build a strong baseline for further experiments;
- compare BM25F with some other Information Retrieval models, especially the Log logistic (LGD [1]) retrieval model;
- exploit some non-social data (but nevertheless related to the users), especially the documents given as negative or positive examples for a topic.

Our experiments were conducted using the Terrier Information Retrieval System³ [4], that implements various IR models and especially LGD and also some field-based models as BM25F.

The paper is organized as follows: Section 2 presents briefly the Information Retrieval models used. Then, Section 3 details our approaches aiming at exploiting the positive or negative documents related to each topic. Finally, Section 4 presents the official results obtained, before concluding in section 5.

2 BM25F vs LGD (runs UJM_1 and UJM_2)

The Social Book Search 2015 dataset contains many various data describing or related to the documents, the topics and the users. Among all these information, we have used the Terrier Information Retrieval System implementation of the field-based models BM25F [5], in order to exploit the following fields from documents and topics:

- the fields title, summary, content and tags from the documents;
- the fields title, mediated_query and narrative from the topics;

BM25F was used with the parameters values presented in Table 1, taken from our participation to Social Book Search lab 2014 [2], generating our run named **UJM_1**.

Table 1. BM25F parameters

	Fields			
	title	summary	content	tags
Parameter c	1.0	0.10	0.45	0.00
Weight w	1	2	1	6

LGD is the Terrier implementation of the Log logistic model [1]. Grid optimization of parameter c on SBS 2014 data led to fix it at 0.2, generating our run named **UJM_2**.

³ Terrier: <http://www.terrier.org>

3 Documents given as “examples” (runs UJM_3, UJM_4, UJM_5, UJM_6)

Our last goal was to exploit some non-social data (but nevertheless related to the users): the list of documents given as negative or positive examples for each topic. Our idea was that a user might be interested (respectively unsatisfied) if he finds as answers documents that he has read and that he appreciated (respectively disliked) and thus defined as positive (respectively negative) example for the topic.

We implemented this hypothesis in two ways:

Re-ranking (RR): Achieve a re-ranking where the document a user likes are boosted, and the documents he dislikes are removed for the result. After the score normalization between 0 and 1, we add 1 to the normalized score of document that the user likes and to set the score to 0 for the document that he dislikes. This process is then a post-processing of an existing run. It is worth noting that, if several retrieved documents are liked by the user, their relative initial ranking is preserved; It has been applied on our BM25F run **UJM_1** (generating our run **UJM_4**) and also on our Log logistic run LGD run **UJM_2** (generating our run **UJM_6**);

Relevance Feedback (RF): Define a relevance feedback, positive for the documents that the topic user likes, and negative for the documents he does not like. We achieved such relevance feedback on our BM25F **UJM_1** run (generating our run **UJM_5**), and also on our Log logistic LGD run **UJM_2** (generating our run **UJM_3**). The relevance feedback uses all the positive documents and selects the top 10 terms according to the default selection of Terrier [4].

4 Results

The Table 2 presents the official results obtained by our 6 runs. Log logistic (LGD) outperforms BM25F, regarding the official nDCG@10 measure as well as regarding the 3 other measures, despite the fact that BM25F is designed to take into account and to weight the different fields describing the documents.

Our approaches “Re-ranking (RR)” and “Relevance Feedback (RF)”, both exploiting the list of documents given as negative or positive examples for each topic, lower the quality of the results. These approaches are based on a different interpretation of this list of documents than the interpretation of the Social Book Search organizers. Actually, these “examples” documents (the negative ones as well as the positive ones) are not considered as relevant by the organizers. Thus, re-ranking positively the positive examples (or using them as relevant documents in a relevance feedback process) can only lower the results. On the other hand, removing the negative examples from our runs (or using them as irrelevant documents in a relevance feedback process) may sometimes improve the results. All in all, the quality of our results is lowered.

Table 2. Official results for the 6 UJM runs

Rank	Run	nDCG@10	MRR	MAP	R@1000	Profiles
17	UJM_2 (LGD)	0.088	0.174	0.065	0.483	no
20	UJM_6 (LGD + RR)	0.084	0.160	0.060	0.483	no
24	UJM_1 (BM25F)	0.081	0.167	0.056	0.471	no
29	UJM_3 (LGD + RF)	0.079	0.155	0.059	0.485	no
30	UJM_4 (BM25F + RR)	0.079	0.158	0.055	0.471	no
33	UJM_5 (BM25F + RF)	0.074	0.150	0.054	0.471	no

5 Conclusion

This paper describes the work of the LaHC lab of Saint-Étienne for the Social Book Search lab at CLEF 2015. Our quite basic experiments show that Log logistic (LGD) outperforms BM25F. Four of our six runs were based on a mis-interpretation of the documents given as negative or positive examples for a topic.

Our 2015 participation allows us to build a strong basis in order to experiment in the future some more advanced some Personalized Information Retrieval approaches.

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